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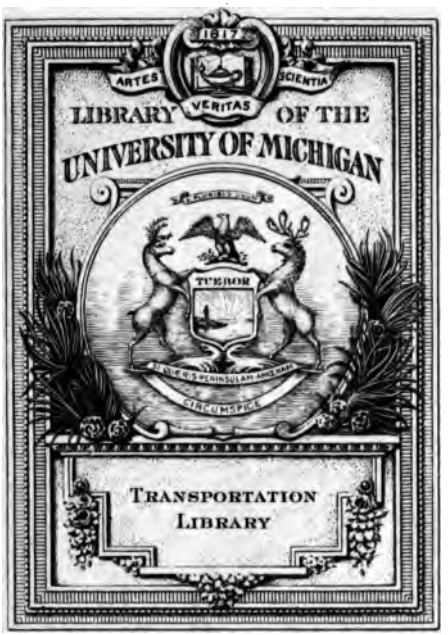
THE RAILROAD SITUATION

IN THE UNITED STATES

L. W. SERRELL, M. E.



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THE RAILROAD SITUATION IN THE UNITED STATES

BY

L. W. SERRELL, M. E.

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PUBLIC SERVICE CORPORATIONS,
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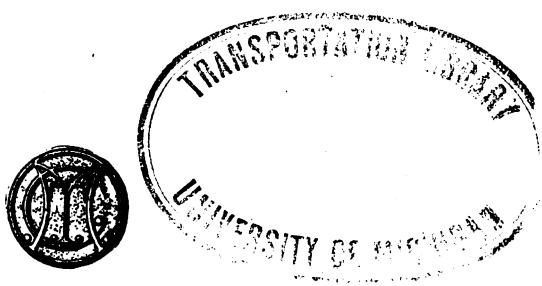

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THE RAILROAD SITUATION IN THE UNITED STATES

BY

L. W. SERRELL, M. E.

TEN years ago many of the railroad companies in this country were going through reorganization after failure. At the present time many of the railroads are going through, what might be called, reorganization without failure; that is, continually issuing new securities, causing mistrust and misunderstanding on the part of the public. A few years ago the business of the railroads had grown to such an extent that it seemed impossible to secure equipment fast enough to handle the business that was offering and a great freight congestion ensued.. New securities were issued by the railroads to provide funds to pay for such equipment. Stockholders, the public and Exchange traders, looked upon these securities as having great speculative value through the possibilities of increased business and the stocks, with the accompanying rights, usually rose in value,

so much so that the expression "A melon is going to be cut" came generally into use. Today the railroad companies are continuing to issue new securities for the purpose of providing not only new equipment but new trackage and terminal facilities, which have proven inadequate, but new stock issues, with the accompanying rights, are not looked upon with the same favor as formerly. In fact, in almost every case, where such new issues have been brought out, the value of the stocks in question have declined.

The purpose of this article is to show why such new security issues are necessary, and whether or not they are to the disadvantage of the shareholder.

The reports published by the various railroad companies contain the expression "Miles of road operated" and then proceed to show the gross earnings and net earnings per mile. This expression is very misleading, as it refers usually to the length of the road and makes no allowance for the miles of second, third or fourth track, sidings or terminal facilities which are just as necessary for the operation of the road as the original track. At the same time, the construction of such additional tracks is made necessary to handle the equipment required for the business moving over the line, and securities, either stock or bonds, must, from time to time, be issued to provide funds for the construction of the same.

In order to properly analyze a railroad report and make comparisons, it is necessary to consider the entire mileage of the railroad—whether it be main track, second track, sidings or what not—and

figure the earnings per mile of track, as the entire mileage is covered by the Capital account upon which earnings are expected to pay interest.

It is obvious to anyone who stops to think that the earning capacity of a railroad is limited to the number of tons of freight and the number of passengers that can be carried over one mile of single track in 24 hours; hence, there is a maximum amount of business that it is possible to handle which cannot be exceeded and the construction of additional tracks is necessary to handle any increase. It is, therefore, obvious that with the earning power of a railroad thus limited, the value of its securities must likewise be limited, and the question to be answered is this: Will the increasing business bring any additional market value to the securities? In order to answer these questions it will be necessary for the reader to first have some knowledge of the railroad situation, as the earnings vary in different sections of the country, and then explain the earning power of a mile of railroad track, and show what effect earning power, through the addition of more tracks, and equipment, has upon the value of the securities. The fact that a railroad is increasing its earnings from year to year does not necessarily mean that the market value of its stock should be any greater.

Railroads operating in different sections of the country have different classes of business offered to them. Throughout the West, crops and lumber form the principal part of the business. Through Pennsylvania it is largely made up of the products

of mines, such as coal; also of manufactures. Through New England it is principally manufactured products. In all cases, the amount of general merchandise depends upon the population served.

It must likewise be remembered that the business offered to certain railroads is much more stable than that offered to others, and consequently the earnings are not subject to such a great risk of variation as in other cases where the railroads depend largely upon crops, where failures may occur.

The growth of this country has been exceedingly rapid. People living in the East are frequently startled when they stop to consider the increase in population in the cities of the Atlantic seaboard and vicinity, but such growths are very small compared with the rapid growth of many of the western cities. This may be illustrated by the following census figures showing the increase in population in 20 years' time of some of the leading cities throughout the country:

	1880.	1900.
Minneapolis, Minn	46,887	202,718
St. Paul, Minn	41,473	163,075
Duluth, Minn	838	52,969
Seattle, Wash	3,533	80,671
Tacoma, Wash	1,098	37,714
Spokane, Wash	350	36,848
Birmingham, Ala	3,086	38,415
Kansas City, Kan	3,200	51,418
Denver, Colo	27,146	133,859

When these remarkable figures are considered it is not to be wondered that the railroads have had to purchase additional equipment and increase their trackage to take care of the business offering and this condition must necessarily continue in the future, due to the fact that earning power of a mile

WASH.
MONT.
N. DAK.
MINN.
OREGON.
IDAHO
S. DAK.
GROUP-7.
WYOM.
NEB.
IOWA
WIS.
MICH.
GROUP-2.
N.Y.
PENN.
GROUP-3.
ILL.
IND.
OHIO.
W. VIR.
MD.
NEV.
UTAH.
GROUP-8.
COL.
KAN.
MISSOURI
KEN.
VIR.
CAL.
TENN.
N.C.
GROUP-5.
GROUP-4.
S.C.
OKLA.
IND. TER.
ARK.
ARIZ.
NEW MEX.
GROUP-6.
GA.
MISS.
ALA.
TEXAS
LA.
FLA.
MEXICO

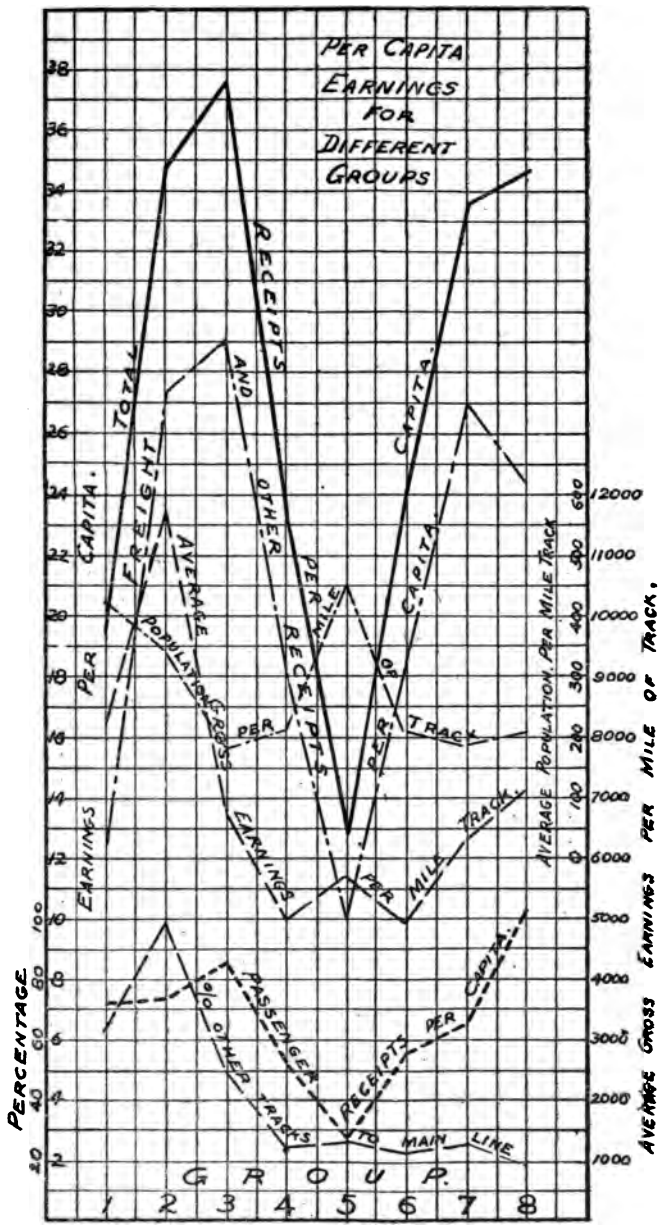
PER CAPITA EARNINGS FOR DIFFERENT GROUPS
PERCENTAGE
AVERAGE GROSS EARNINGS PER MILE OF TRACK.
AVERAGE POPULATION PER MILE TRACK
GROUP
1
2
3
4
5
6
7
8
TOTAL PER CAPITA EARNINGS
FREIGHT AND OTHER RECEIPTS
AVERAGE POPULATION PER MILE OF TRACK
PER CAPITA EARNINGS
PER MILE OF TRACK
PASSENGER AND OTHER TRAFFIC RECEIPTS
PER CAPITA
% TO MAIN LINE

FIG-1.

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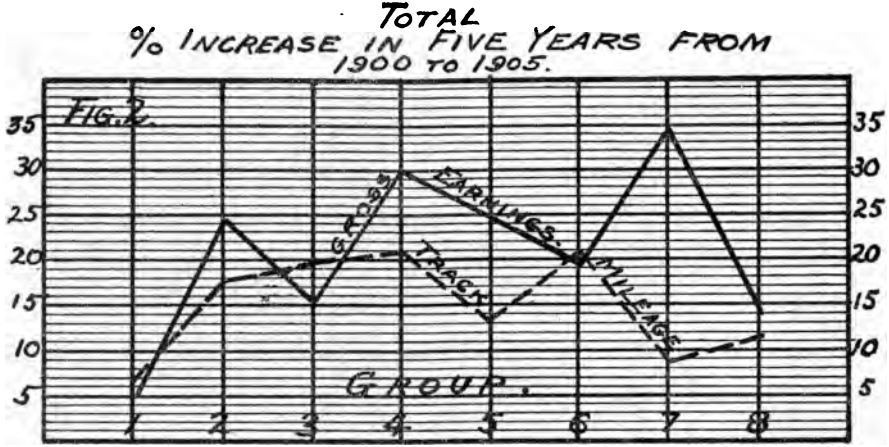

FIG. 2.

The character of the business done by railroads in different sections of the country varies considerably, as well as the price obtained for doing the same. In New England the passenger business bears the largest percentage to the total business done. There is also a considerable variation in the cost of operating different railroads, operating expenses being usually figured as so much per cent. of the gross receipts. The freight charges per ton-mile, as well as the passenger charges per passenger-mile, also enter into the consideration of the question and should be understood by the reader, particularly in view of the legislative effort now being made to make passenger rates as near uniform as possible and not to exceed 2c. per passenger-mile. The following table gives this information, namely, freight charges per ton-mile—passenger charges per mile—per cent. passenger receipts to gross earnings—per cent. operating expenses to gross earnings.

Name.	Freight Charges Per Ton Mile.	Passenger Charges Per Mile.	Per Cent. Passenger Receipts to Gross Earnings.	Per Cent. Oper'ng Expenses to Gross Earnings.
N. Y. N. H. & H.....	1.41c	1.70c	40.0%	71.7%
Boston & Maine.....	1.15c	1.75c	34.6%	73.5%
D. L. & W.....	.79c	1.43c	10.8%	53.1%
B. & O.....	.57c	1.96c	20.4%	66.1%
New York Central.....	.62c	1.73c	30.0%	71.4%
Erie	.62c	1.48c	20.5%	68.6%
Pennsylvania	.593	2.01c	20.3%	69.7%
Illinois Central.....	.59c	1.84c	21.6%	66.8%
C. M. & St. P.....	.88c	2.24c	20.2%	61.5%
Rock Island.....	.94c	2.18c	27.4%	70.4%
C. B. & Q.....	.84c	1.96c	29.5%	64.1%
C. & N. W.....	.92c	2.02c	23.7%	65.4%
Atlantic Coast.....	1.31c	2.46c	22.0%	60.5%
C. & O.....	.43c	2.02c	19.0%	63.9%
Southern	.95c	2.28c	26.0%	72.8%
Lou. & Nash.....	.79c	2.29c	22.4%	68.7%
Nash. & Chat.....	.90c	2.45c	20.1%	74.7%

A. T. & S. F.....	1.00c	2.16c	23.8%	66.6%
M. K. & T.....	1.11c	2.07c	24.6%	72.9%
Frisco	1.01c	2.27c	25.5%	64.4%
Great Northern.....	.79c	2.38c	18.3%	49.3%
Northern Pacific.....	.83c	2.23c	22.3%	52.8%
Union Pacific.....	.89c	2.14c	19.2%	51.2%
Southern Pacific.....	1.05c	2.18c	29.5%	66.6%

The results from both of these tables have been plotted in a diagram, Figure 3, and in addition thereto the length of main line operated, together with the length of 2nd tracks, 3rd tracks, 4th tracks and sidings, are shown on this diagram with heavy black lines, so that at a glance the reader may be able to judge the proportion the so-called auxiliary tracks bear to the length of the main line. This is small, particularly throughout the West.

In order to explain this table we will take some example at random, such as the Pennsylvania Railroad, and by observing the column above the name we find as follows: Gross earnings slightly greater than $15,000 per mile—Freight and other earnings slightly less than $12,000 per mile—Passenger earnings a little in excess of $3,000 per mile—and net earnings a little over $4,500 per mile.

To read the trackage we take the heavy black lines from the left to the right as follows: Main line about 3,800 miles—Second track 1,200 miles—Third track 450 miles—Fourth track 300 miles—Sidings and terminals about 3,200 miles. The percentage of passenger receipts to gross earnings is about 21%—the cost of operation is about 69% of the gross earnings—freight charges per ton-mile

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ties which the business of the road appears to make necessary.

By taking the total tonnage of freight moved one mile, given in the railroad reports, and dividing it by the total mileage of track, we will have the average tonnage moved over each mile of track per annum. In the same manner by taking the total number of passengers hauled over one mile and dividing it by the total number of miles of track, we will have the average number of passengers hauled over each mile of track belonging to the railroad system. The reader, of course, understands that on some parts of the line there is a greater amount of freight moved and a greater number of passengers hauled than on other parts of the line, but to meet these conditions the railroad companies have been gradually building additional tracks, sidings and terminals, where the traffic has been most congested, so that by determining the average number of passengers and the average tonnage of freight moved over each mile of track, we get as close to the real conditions of operation as possible.

The following table has been prepared giving the percentage that all 2nd, 3rd and 4th tracks, sidings and terminals bear to the length of the main line. It also gives the average number of passengers hauled over each mile of track per annum together with the average number of tons of freight and the gross earnings per mile of track per annum. The railroads referred to are separated into the groups to which they belong.

TABLE 4.

Name.	Percentage Other Tracks to Main Line.	Average No. Passengers Over Each Mile Track Per Annum.	Average Tons Freight Over Each Mile Track Per Annum.	Gross Earnings Per Mile Track Per Annum.
GROUP 1—				
Boston & Maine..	75%	174,000	461,000	$9,010
N. Y. N. H. & H.	104%	277,000	409,000	11,780
GROUP 2—				
B. & O.....	78%	99,990	1,246,000	9,440
N. Y. Central...	115%	180,600	1,040,000	10,650
Jersey Central...	131%	157,000	1,244,000	12,930
Pennsylvania ...	132%	146,000	1,895,000	15,040
Reading	148%	144,000	1,480,000	14,600
D. L. & W.....	165%	147,000	1,450,000	15,570
GROUP 3—				
C. B. & Q.....	32%	71,700	463,000	5,840
St. Paul.....	35%	46,700	423,000	5,156
C. & N. W.....	46%	60,800	394,000	5,115
Illinois Central..	52%	87,000	833,000	7,420
GROUP 4—				
Atlantic Coast...	17%	39,300	232,000	4,400
Southern	27%	63,500	391,000	5,600
C. & O.....	53%	75,000	1,457,000	8,070
GROUP 5—				
Nashville & Chat.	29%	55,300	502,000	6,360
L. & N.....	24%	73,600	697,000	7,650
GROUP 6—				
M. K. & T.....	20%	65,000	348,000	5,490
Frisco	24%	53,100	316,000	4,740
Atchison	28%	69,800	444,000	6,413
GROUP 7—				
Great Northern..	23%	47,000	585,000	6,100
Northern Pacific.	30%	70,000	640,000	7,272
Union Pacific....	30%	74,000	663,000	8,090
GROUP 8—				
Southern Pacific.	32%	97,000	551,000	7,250

The results of this table are plotted in Figure 4. They are arranged, however, with reference to the increase in the percentage of other tracks to the main line, the railroads on the left of the chart having the least percentage and on the right of the chart the greatest percentage.

The total tonnage of freight and the total number of passengers carried over each mile of track per annum are likewise plotted. These lines, show, however, that as the percentage of double tracks increase the amount of freight and the number of passengers hauled over each mile of single track

FIG. 4.
TONS FREIGHT CARRIED.
GROSS EARNINGS PER AVERAGE MILE OF TRACK
AVERAGE PER ANNUM
TONS FREIGHT CARRIED PER MILE OF MAIN LINE.
PASSENGERS CARRIED PER MILE OF MAIN LINE.
PER CENT. OTHER TRACKS TO MAIN LINE.
GROSS EARNINGS PER TRACK PER ANNUM.
O/O
OTHER TRACKS
ATLANTIC COAST
M K & T.
GREAT NORTHERN
FRISCO
LOU. & NASH
SOUTHERN RY
A.T. & ST. FE.
NASH & CHAT
NOR. PAC.
UNION PAC.
C. B. & Q.
SOU PAC.
C.M. & ST.P.
C & N.W.
ILL. CENT.
C. & O.
BOS. & MAINE
B. & O.
N.Y.N.H. & H.
ERIE
N.Y. CENT.
JERSEY CENT.
PENN. R.R.
READING.
D.L. & W.

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accompanied by the gravest of dangers. It has recently been admitted that railroads have allowed engineers to pass signals set against them under cautionary orders. Such orders have been allowed through the necessity of insufficient trackage to handle the business offered, but they likewise have been allowed through the desire of the management to earn interest and dividends. The locomotive engineer is not unlike the driver of a motor car who, subject to speed craze, when arrested declares that he did not know he was going so fast. So with the locomotive engineer. He may not realize the speed at which the train is traveling and the enormous momentum behind it when passing signals under cautionary orders, and the result is a collision, with the sacrifice of many lives.

It is an exceedingly difficult problem to determine the amount of freight that can be handled over each mile of track per annum before it becomes necessary to double track the line. It has been admitted, however, by the management of several of the railroads in the northwest that they are no longer able to handle the business offering with the trackage they now have and that double tracks must be put in as rapidly as possible.

If we refer to Table 4, Group 7, we will find that the roads to which this statement applies are handling about 600,000 tons of freight over each mile of track with a comparatively small passenger business. It is, therefore, safe to say that these figures represent the limit to which the business can be pushed where the percentage of auxiliary tracks is

about 30% of that of the main line. The amount of business, however, that can be handled over each mile of track can, of course, be greatly increased as the percentage is increased. This has been illustrated in the case of the Great Northern Railway. By referring to the table and taking such cases as the Pennsylvania, Jersey Central and Reading Railroads in Group 2, which have about 4 times the amount of auxiliary tracks that the roads in Group 7 have, and the amount of freight handled over each mile of track is from 2 to 3 times as much, with more than double the passenger business per mile of track. By referring further to this table, it will be found that in addition to the railroads mentioned in Group 7, that the following railroads have about reached the limit of tonnage that can be handled over their tracks as they now exist, and that extraordinary expenditures must be made in the immediate future to increase the amount of their double tracks, sidings and terminal facilities: Southern Pacific, Louisville & Nashville, Chesapeake & Ohio, and that in a very few years the Atchison, Illinois Central and Burlington must do likewise. Many of the other railroads quoted will have to provide additional equipment before the trackage is increased.

In order that the reader may further understand the conditions under which the various railroad systems herein quoted are operated, an analysis has been made showing for what purpose the gross receipts are used. These uses are classified under four headings, viz: General Expenses and Conducting Transportation:—Maintenance Charges:—Rent-

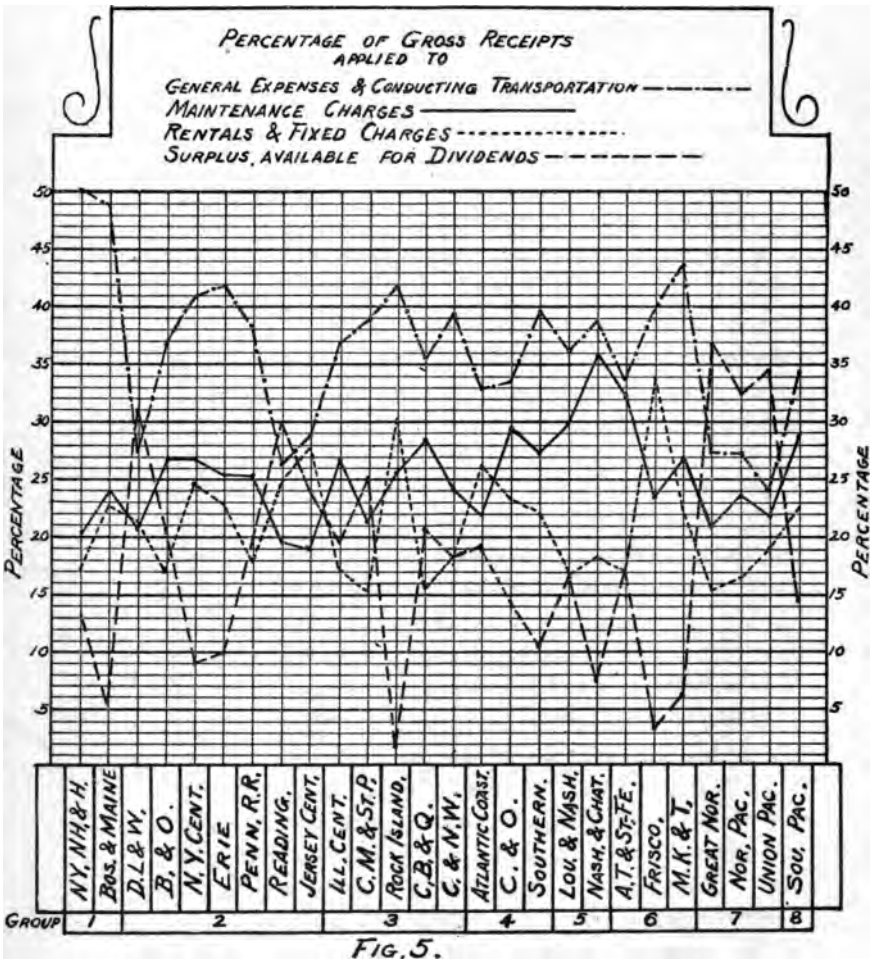
PERCENTAGE OF GROSS RECEIPTS
APPLIED TO
GENERAL EXPENSES & CONDUCTING TRANSPORTATION
MAINTENANCE CHARGES
RENTALS & FIXED CHARGES
SURPLUS, AVAILABLE FOR DIVIDENDS
PERCENTAGE
50
45
40
35
30
25
20
15
10
5
N.Y. N.H. & H.
BOS. & MAINE
D.L. & W.
B. & O.
N.Y. CENT.
ERIE
PENN. R.R.
READING.
JERSEY CENT.
ILL. CENT.
C.M. & ST.P.
ROCK ISLAND.
C.B. & Q.
C. & N.W.
ATLANTIC COAST.
C. & O.
SOUTHERN.
LOU. & NASH.
NASH. & CHAT.
A.T. & S.F.
FRISCO.
M.K. & T.
GREAT NOR.
NOR. PAC.
UNION PAC.
SOU. PAC.
GROUP
1
2
3
4
5
6
7
8

FIG. 5.

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Transportation, as it would require a very lengthy and detailed analysis for each individual railroad in question, but the enormous differences that exist cannot be passed without some criticism, even though it be merely the statement that such a difference does not appear to be warranted and the stockholders of any of the properties herein mentioned who are sufficiently interested can look into this question for themselves.

With several exceptions the percentage of the Gross Earnings used for Maintenance Charges are comparatively uniform, the highest being the Nashville & Chattanooga at 35.8% and the lowest the Jersey Central at 19%. Many railroads are in better physical condition than others, and the interest of the stockholders will be best conserved by using a greater percentage of the earnings to bring up the standard of properties that are not in good repair. With the exception of the Nashville & Chattanooga and Atchison systems, the percentage applied to Maintenance Charges is comparatively uniform. The average for all of the railroads mentioned is 25.2%.

Nearly all of the railroads in this country have a greater amount of trackage under a lease than they have through outright ownership. In such cases the lease provides for a rental, the corporate identity of the railroad company being kept up, the money received from rentals being used to pay interest and dividends upon the securities which in this way are guaranteed by the lessor company. The lessor company operates the road, pays all maintenance

charges, furnishes such new equipment and new construction as may be necessary and keeps what is left after paying these charges. Such underlying stocks and bonds have very little speculative value and are not traded in extensively upon the Exchanges.

The percentage of Gross Earnings required to pay rentals and fixed charges depends entirely upon the Capital Account, and this account shows the manner in which the railroads may have been reorganized, consolidated or leased and may be taken as a reasonably safe index of inflation or conservative capitalization. There is a tremendous variation in the percentage used for this purpose. Of the roads quoted in the table the highest is for the Frisco, now part of the Rock Island System, namely 34%, and the lowest are for the Great Northern, Burlington and St. Paul, which are all about the same at 15.2%, 15.4%, 15.1% respectively.

It has been shown herein that the business of many of the railroads in this country is not developed in proportion to their trackage, to the same amount that other railroads have been. This is due to the fact that some railroads run through much leaner country than others. The growth of the country is not as rapid, nor the business as progressive, and yet the demand for railroad facilities has required their construction, even though they were not capable of earning as much on the investment as other sections of the country, and the investor (who owns such securities) must be satisfied with the slower proposition.

The surplus available for dividends shows a remarkable variation, the Rock Island Company having the smallest surplus, 1.7%; that is 98.3% of the gross receipts are used up before the stockholders can have consideration. The Great Northern shows the largest surplus, 36.9%.

Many of the railroads have made extraordinary appropriations out of their surplus for betterments, such as new trackage and new equipment. This is in addition to the percentage paid out under general operation of the road for "Maintenance Charges." The following figures will show the magnitude to which this has been carried by some of the railroads during the year 1905, from which the figures herein quoted are taken:

D. L. & W.	$3,587,486
B. & O.	2,500,000
Erie	1,360,555
Pennsylvania	8,424,881
Illinois Central	1,683,886
C. & O.	1,217,476
Southern	1,056,540
Great Northern	3,000,000
Northern Pacific	3,000,000
Union Pacific	4,479,155

The railroads throughout the country have to a greater or less extent kept up the requirements for new equipment, trackage, sidings and terminal facilities that the business offering has demanded. Many have likewise extended into new territory which, as time goes on, will prove valuable. It has been shown herein that as these auxiliary tracks are increased, the gross earnings per mile of track are likewise increased and it is of interest to know at what percentage rate the gross earnings on each mile of track increase per annum. The following table, covering a

number of principal roads, has been prepared by figuring the gross earnings per mile of track for the year 1900 and determining what the average rate of increase for the last five years has been per annum.

PERCENTAGE INCREASE GROSS EARNINGS PER MILE OF TRACK PER ANNUM.

Average for Five Years.

N. Y. N. H. & H.	3.9%
Boston & Maine	4.3%
D. L. & W.	11.3%
B. & O.	8.6%
New York Central	3.7%
Erie	1.7%
Illinois Central	4.7%
C. M. & St. P.	.7%
Rock Island	.5%
C. B. & Q.	4.0%
C. & N. W.	2.3%
Atlantic Central	4.0%
C. & O.	5.6%
Southern	8.0%
L. & N.	1.8%
Nash. & Chat.	3.6%
Atchison	5.0%
M. K. & T.	3.0%
Frisco	3.6%
Great Northern	14.1%
Northern Pacific	9.0%
Union Pacific	5.6%
Southern Pacific	2.5%

It will be noted from this table that some railroads have shown a greater increase than others, the highest per annum rate being that of the Great Northern, 14.1%, and the lowest rate being that of the Rock Island, which shows a decrease of ½%.

For the year 1900 the gross earnings per mile of track on the Great Northern Railroad were $3,570 and for 1905 $6,100, an increase per mile of track of over 70% for five years, or at the rate given per annum.

On the Rock Island Railroad the mileage has been greatly increased, extending into new territory. In fact, the mileage is almost double what it was five years ago, but the earnings per mile of track for the

entire extended system were not as great for 1905 as for 1900. The average rate of increase for all of the railroads given is about 5% per annum. The reader can, therefore, understand from this table that published reports showing large increases in earnings from year to year are somewhat misleading. These increases in earnings are produced by increases in the Capital Account. New securities must be issued to pay for additional trackage and equipment. Roads in which the business is not developed up to the point requiring new equipment and trackage, get the benefit of this increase with less Capital Expenditure.

The value of securities may be said to depend upon three things: namely, stability, returns upon investment and speculative value, different people seeking different classes of investment.

It would require a very exhaustive work to touch upon the many underlying bonds and stocks of railroad corporations. Further, in many cases the railroads are leased, the lessor company paying rentals. It is, therefore, difficult to determine the actual amount of securities issued per mile of track except by a detailed study of each individual case. Rentals are likewise a fixed charge as much as interest on bonds. The general public is more interested in the stocks of the different railroads than they are in the underlying securities, as they have a greater speculative value. Many of the railroads report the ownership of stocks and bonds in companies operated under a lease and otherwise, from which securities the operating railroad derives an income. The

figures herein quoted include the income derived from said securities as railroads report the same. Therefore, under the heading "Net Income" such revenue is included in addition to the "Net Traffic Returns."

There have been many changes in the capitalization of roads during the last year. To determine the value of a security some basis of interest returns must be assumed.

It will be found that if a 5% basis be taken and the entire surplus earnings of the different roads used in figuring the value of their stocks, that many of the stocks are still selling too high and many are bargains at the present level of prices.

While it is admitted that there are many wrongs that should be righted in the railroad situation, it must be remembered that a wrong cannot be righted with a wrong. Public confidence is essential to prosperity. In order that the railroads may keep up with the growth of the country, it has been shown herein that many millions must be expended for improvements, increased trackage, equipment and terminal facilities; the total requirements for 1906 approximated $500,000,000. The money for such improvements much come from the public. The public must have confidence in the properties, their management, and in the stability of the market values of the investment, or they will not put their money into the same. Already a feeling of unrest has grown to an alarming extent. Legislative and municipal bodies are making attacks upon Public Utilities and from the nature of the attacks, it would

appear as though the members of these legislative bodies did not understand the gravity of the subject before them; felt they were elected to office to do something and that the most popular thing they could do, politically, would be to enact legislation of a nature, which robbed of its verbiage, is confiscatory in its tendencies. At the present time it is a prevailing idea that the Management of Public Service Corporations seek to rob the people and, therefore, the management of Public Service Corporations should be more or less taken away from those in control, and the actual administration of the affairs of the railroads assumed by the state. Any such action is not likely to remedy the wrongs that exist but is likely to bring to thousands of people a loss of their savings. In spite of statements to the contrary some foreign investors are selling their securities back to this country because such securities are continually subject to violent assault from legislative and municipal officers. It is true that the whole theory of business seems to be to make all you can for yourself, while the other man to the trade tries to prevent you from making any more than he can help. The duties of the legislative and municipal bodies to the public should not go beyond an effort to try and make a fair deal between both parties, and if the railroads are to continue serving the public to the satisfaction of the public, they can only do so by the public having confidence enough in their management and the securities offered to invest their money therein. Some of the legislation that

has been passed for the regulation and supervision of railroads has been wise, there being a difference between attempts at supervision and administration.

The suggestion has been made that the valuation of railroads be ascertained by a commission, so that the exact amount of money invested therein may be known and be used as a guide to the Government in regulating or supervising the cost of transportation. Such a plan is not feasible for the following reasons: It is impossible through any method of appraisement to determine the amount of money actually invested in railroads. The Genius in this country is always active in making improvements. The necessities of business have made the adoption of such improvements necessary and many devices and apparatus have been discarded before they have been worn out. Millions of dollars have been invested by the Management of Public Service Corporations in an effort to give the public the best service possible and improvements have been discarded almost as soon as installed to make way for something that will further benefit the service. Bridges have been discarded; rails and equipment have been replaced, because with heavier locomotives and cars of greater capacity it has been found that freight can be handled more economically. Grades have been cut down, roadbeds have been relocated, and curves removed and many other instances could be cited to show how difficult it would be to arrive at any fair valuation of money invested. Such a task would be Her-

culean, and no matter how honest the Commission, unfairness would result to holders of such securities; but assuming that such a valuation be possible, rate legislation based upon the same would only result in strengthening the strong and crushing out the weak. This article has shown that the earnings of railroads per mile of track vary greatly. The cost per mile of track is the unit basis upon which values must be considered and it has been shown herein that by doubling the auxiliary trackage or the investment, earnings are increased threefold. That the same ratio holds good for whatever percentage increase is made, provided the business offering warrants the increase. Rate legislation, therefore, based upon valuation of property would compel railroads whose business has been developed up to the maximum earning capacity of its trackage, to charge a rate for handling freight and passengers which would mean bankruptcy to roads whose business had not been so developed, but these weaker roads through competition would have to meet the rates of the more prosperous roads or go out of business, and meeting such rates would cause their financial ruin.

With the best brains in the country working on this subject, the writer does not feel confident to do any more than make a few suggestions which may be useful to those who are giving this subject thought in working out some fair plain by which all sides may get a fair deal. In order to make it possible for railroad companies to serve the public at more uniform rates for both passenger and freight

charges, the percentage of the Gross Receipts used for Operating Expenses should be made more uniform. The roads herein quoted show a variation from 74.7% to 49.3%. If the "Operation Per Cent." line shown in Figure 3 could be flattened out, the lines shown in this figure representing the variation in the Freight and Passenger charges could likewise be flattened out.

The greatest variation in the Operating Expenses of railroads is in that portion entitled "General Expenses and Conducting Transportation." This line is shown in Figure 5. It has been pointed out that it costs more to handle passengers than it does to handle freight. It has likewise been pointed out that the railroads receive more for this service. Should legislation be passed, making the rate of wages that could be demanded by and paid to the labor employed more uniform, and the Executive and General Expenses limited by law not to exceed a fixed percentage of the Gross Receipts, much would be accomplished in making this percentage more uniform and thus flatten out the line referred to in Figure 5.

The line in Figure 5 representing Maintenance Charges could likewise be flattened out by enacting legislation requiring railroads to appropriate a minimum of 25% of their Gross Receipts for this account. This is the average amount herein shown to be so appropriated. Should it not be necessary to use the entire amount in any year, it can be put in a fund for Maintenance and Betterments, to be used when necessary. Such a fund may help keep

down the amount of new securities that must be brought out. Nothing can be done to straighten out the line representing the per cent. of Gross Earnings used for "Rentals and Fixed Charges" except to exercise more supervision over leases and Bond Issues that may be made in the future. These securities are in the hands of an innocent public and any attempt to rob them of the value of their investment would, under our laws, send a private citizen to prison.

Many of the railroads in this country have failed and been reorganized during the last 15 years. Fortunes have been lost through the enterprise of the American citizen building railroads through undeveloped territory where the business was not sufficient to make them pay at first. The people of the country, believing in their institutions, have purchased the securities of these reorganized roads.

Before money will venture into speculative enterprises, it must be attracted thereto by the opportunity of making more than the usual rate of interest afforded by propositions that are entirely safe, and if water has been introduced into the securities of the railroads in the past, it has been done to attract the money. Frequently we hear the remark that legislative action should be taken to squeeze out the water. Such action can in no way benefit the public who use the railroads for transportation purposes.

The securities of railroads are today held in the hands of hundreds of thousands of people who have purchased them with hard earned savings and put

them away because they believed they were a safe investment, and in the pressure of other business they have not the time to keep in touch with all that may be suggested or doing that may prove disastrous to their investments.

The large holders of these securities indentified with the railroad management are continually in touch with all threatened legislation and will be the first to dispose of their holdings, thus securing the highest price when danger proves eminent. The result will be that the public at large will be the sponge out of which legislative action will squeeze the water and those who have been first warned of danger, will have the cash and the bucket in their hands ready to catch the water as it drips from the sponge.

Attacks upon our institutions will only produce harm, likely to result in a panic throughout the country.

If mistakes have been made in the past they cannot be remedied by legislation, which will produce distrust and will not benefit the transportation users of the railroads. Further, if the railroads are to keep apace with the growth of the country and afford the necessary transportation facilities which this growth demands, they can only do so by inducing the public to furnish the money, through the purchase of securities, necessary for new construction and equipment.

The public will have confidence in new securities offered if the water is kept out of such issues. One form of legislation that will produce these re-

sults will be that which requires a detailed statement from the railroads of the improvements they propose to make, showing the use to which the money received is to be put. This can best be done by uniform legislation.

The United States is made up of 47 states. Each state has its own governor and each governor is desirous of swinging a big stick of his own. It is a great deal better for the railroads to be beaten into submission by one big stick, applied in the right direction, than to be beaten in different directions by 47 big sticks, having different objects to accomplish.

It should be borne in mind that practically all of the railroads are interstate in their operations and, therefore, Federal legislation will probaby be the best to produce uniform results.

Many of the states, such as North Carolina, are considering state legislation which is adverse not only to railroads but other forms of Public Service Corporations. So much so that the bills have been called "Tar Heel Bills." What have the railroads done that they should deserve such treatment as this in North Carolina? We find that North Carolina belongs to Group 4. We find from Figure 2 that the mileage has been increased 21.7%. This is greater than any other group in the country; that there is one mile of railroad track for every 210 inhabitants, against one mile of railroad track in Group 2 for every 340 inhabitants and in Group 5 for every 450 inhabitants. In other words, the mileage has been increased a greater percentage in

the last five years than any other section of the country.

That these railroad companies, however, have not received returns on the investment made for the benefit of the public is shown by the fact that the Gross Earnings are only $4,950 per mile of track per annum, next to the lowest in the entire list, the lowest being $4,900. It does not seem fair when the railroads are striving to serve the public that they should be continually harrassed by adverse legislation.

The urgent need of additional trackage in the northwest suggests that possibly the railroads have not extended as rapidly as they should, but the legislative attack in Minnesota upon certain charters and suggested legislation in the Dakotas will only delay extensions necessary and will increase the hardships and pecuniary losses already caused through inadequate railroad service.

In conclusion, remember that the railroads operating in different sections of the country do not produce equal returns per mile of track. The railroad whose business only amounts to $5,000 per mile of track per annum cannot be expected to handle the business as cheaply as one having a business of $12,000 per mile of track, and consequently great difficulty will be had in regulating or supervising the rate problem in a fair way to all.

Further, the returns upon railroad investments are not as great as many other forms of investment, such as, Industrials, legitimate mining, etc., and if legislative attacks continue it will not be